

# PATENT ABSTRACTS OF JAPAN

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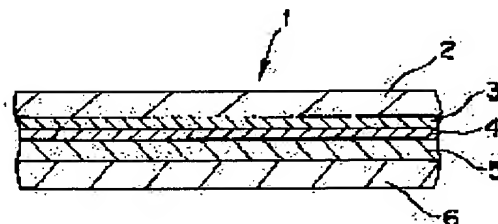
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## (54) COVER MATERIAL

(57)Abstract:

**PURPOSE:** To provide a cover material having an excellent electrostatic characteristic and transparency and further, both highly adhesive and easily separable characteristics to a synthetic resin container.

**CONSTITUTION:** A cover material 1 is provided with a biaxial orientation resin layer 2, a heat-sealant layer 6 in which an electric conductive particles chiefly containing barium sulfate is dispersed in a thermoplastic resin, and an intermediate layer 5 adjacent to the heat sealant layer 6 and located between the biaxial orientation resin layer 2 and the heat sealant layer 6 and constituted of a resin compound made of 30-70wt.% ethylene- $\alpha$ -olefin copolymer having a density of 0.915-0.940g/cm<sup>3</sup> and 70-30wt.% styrene-butadien block copolymer.



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**CLAIMS**

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**[Claim(s)]**

[Claim 1] It has a biaxial-stretching resin layer, a heat sealant layer, and the interlayer that adjoins this heat sealant layer and is located between said biaxial-stretching resin layer and said heat sealant layer. Said heat sealant layer is a layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by thermoplastics, and said middle class is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. 30 - 70 % of the weight of ethylene-alpha olefin copolymers, Lid material characterized by being formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers.

[Claim 2] The weight ratio of said conductivity impalpable powder in which said heat sealant layer is constituted, and said thermoplastics is lid material according to claim 1 characterized by being within the limits of 1:10-5:2.

[Claim 3] Said heat sealant layer is lid material according to claim 1 or 2 characterized by for surface resistivity being within the limits which is 105-1012ohms, and the charge damping time being 2 or less seconds.

[Claim 4] Said thermoplastics which forms said heat sealant layer is lid material according to claim 1 to 3 characterized by being mixed resin of polyurethane resin and vinyl chloride vinyl acetate copolymer resin.

[Claim 5] the mixing ratio of the polyurethane resin and vinyl chloride vinyl acetate copolymer resin which constitute said heat sealant layer -- the lid material according to claim 4 characterized by the range of a rate being 9:1-4:6.

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the lid material which starts lid material, especially is used for the container made of synthetic resin.

[0002]

[Description of the Prior Art] Conventionally, various components, solid or liquefied food, etc. are held in the container made of synthetic resin, and sealing by lid material, circulating and keeping opening is performed.

[0003] For example, electronic parts are contained in each embossing section of the carrier tape on which much embossing was formed, and embossing carrier mold taping which carried out thermal melting arrival and sealed lid material (covering tape) on the carrier tape so that the embossing section might be covered is used. The carrier tape used for such embossing carrier mold taping is usually formed using the ingredient with easy sheet forming, such as a polyvinyl chloride, polystyrene, polyester, and a polycarbonate. Moreover, lid material is equipped with the heat sealant layer formed in one field of a biaxial-stretching resin film and this film. And a means to prevent this with static electricity which generates static electricity which the electronic parts contained contact the embossing section of a carrier tape or lid material, and generate, and a covering tape in case it exfoliates from a carrier tape since there is a danger that degradation of electronic parts and destruction will arise is required of a carrier tape and lid material.

[0004] As a prevention means of static electricity generating in a carrier tape, a conductive carbon particle and a metal particle are scoured in a carrier tape, or applying is performed. Moreover, as a prevention means of static electricity generating in lid material, antistatic agents, such as a surface active agent, a conductive carbon particle, and a metal particle are scoured in the heat sealant layer which contacts electronic parts and directly, or applying is performed.

[0005]

[Problem(s) to be Solved by the Invention] However, in the above conventional embossing carrier mold taping, a carrier tape and lid material checked the electronic parts with which transparency is very low and is contained by embossing carrier mold taping by the conductive carbon particle as a contained antistatic agent from the outside, and had a problem of \*\*\*\*\*.

[0006] Moreover, when a surface active agent was applied, the surface state of the heat sealant layer of a covering tape was changed, seal nature became unstable, and there was a problem that do not become the cause of a poor seal, and the stable antistatic effectiveness was not acquired since the dependency of the static electricity spreading effect by the temperature under storage and humidity is large.

[0007] Furthermore, predetermined reinforcement is required so that lid material may exfoliate and omission of electronic parts may not produce the thermal melting arrival of the lid material to a carrier tape during transportation of embossing carrier mold taping, and storage. However, when this thermal melting arrival reinforcement was too large, there was a problem that the accident on which a carrier tape vibrates and electronic parts jump out of the embossing section of a carrier tape in the case of exfoliation of the lid material in the mounting process of electronic parts occurred. Therefore, it pasted up by sufficient reinforcement for a carrier tape, and it was required that the detachability at the time of electronic-parts use should have been good, and, for this reason, lid material had the problem that conditioning, such as temperature of heat sealing and time amount, was severe.

[0008] This invention aims at offering the lid material which is made in view of such a situation, and has the outstanding static electricity property and transparency, and combines the high adhesive property to the container made of synthetic resin, and good detachability.

[0009]

[Means for Solving the Problem] In order to attain such a purpose, this invention A biaxial-stretching resin layer and a heat sealant layer, It has the interlayer who adjoins this heat sealant layer and is located between said biaxial-stretching resin layer and said heat sealant layer. Said heat sealant layer is a layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by thermoplastics, and said middle class is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. 30 - 70 % of the weight of ethylene-alpha olefin copolymers, It considered as a configuration which is formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers.

[0010]

[Function] The heat sealant layer by which the conductive impalpable powder with which, as for lid material, a barium sulfate is used as base resin at a biaxial-stretching resin layer and thermoplastics was distributed, This heat sealant layer is adjoined, it is located between a biaxial-stretching resin layer and a heat sealant layer, and they are a consistency 0.915 - 0.940 g/cm<sup>3</sup>. 30 - 70 % of the weight of ethylene-alpha olefin copolymers, It has the interlayer formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. The conductive impalpable powder which uses as base resin the barium sulfate contained in the heat sealant layer gives an antistatic property to lid material, without losing the transparency of a heat sealant layer. Moreover, since the exfoliation between the layers of an interlayer and a heat sealant layer or exfoliation by the cohesive failure inside a heat sealant layer is possible, regardless of the thermal melting arrival reinforcement of a heat sealant layer and a carrier tape, it can carry out stably [ exfoliation of lid material ], and certainly.

[0011]

[Example] Hereafter, it explains, referring to a drawing about the example of this invention.

[0012] Drawing 1 is the outline sectional view of the lid material of this invention. The lid material 1 is equipped with the biaxial-stretching resin layer 2, and the adhesives layer 3, and the interlayer 5 and the heat sealant layer 6 by which the laminating was carried out to the biaxial-stretching resin layer 2 through the glue line 4 at order in drawing 1.

[0013] The biaxial-stretching resin layer 2 can be formed with biaxially oriented films, such as polyamide resin, such as polyolefin resin, such as polyester resin, such as polyethylene terephthalate (PET), and polypropylene, and nylon. Thus, thermal resistance can be given to the lid material 1 by forming the biaxial-stretching resin layer 2. The thickness of the biaxial-stretching resin layer 2 can be suitably set up according to the purpose of using lid material, for example, can be set to about 6-100 micrometers.

[0014] By the glue line 4 formed among this biaxial-stretching resin layer 2 and interlayer 5, in case it heat seals, heat and a pressure can be applied to homogeneity. As a glue line 4, it can form with the polyolefine of either polyethylene, a polyethylene vinyl acetate copolymer, an ionomer, polypropylene or these denaturation objects, and about 10-60 micrometers of thickness are desirable. If a cushion function is bad in the thickness of a glue line 4 being less than 10 micrometers and it exceeds 60 micrometers, heat-sealing nature will fall. The adhesives layer 3 is for raising the lamination reinforcement of the biaxial-stretching resin layer 2 and a glue line 4, and can use adhesives, such as an isocyanate system and an imine system. Moreover, surface treatment, such as corona treatment, plasma treatment, and sandblasting processing, may be beforehand performed to the field in which the adhesives layer 3 of the biaxial-stretching resin layer 2 is formed if needed, and an adhesive property with the adhesives layer 3 may be raised to it.

[0015] a glue line 4 -- the adhesives layer 3 -- minding -- a biaxial-stretching resin film top -- spreading or extrusion molding -- it can carry out -- this glue line 4 top -- an interlayer 5 -- a dry lamination -- or an extrusion lamination can be carried out.

[0016] In addition, without forming a glue line 4, directly, it can paste up by the adhesives layer 3 and the laminating of the biaxial-stretching resin layer 2 and the interlayer 5 can also be carried out. Also in this case, adhesives, such as an isocyanate system and an imine system, can be used as an adhesives layer 3. Moreover, surface treatment, such as corona treatment, plasma treatment, and sandblasting processing, can be beforehand performed to the field in which the adhesives layer 3 of the biaxial-stretching resin layer 2 is formed if needed.

[0017] The middle class 5 is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. The ethylene-alpha olefin copolymer used for the middle class's 5 formation is a copolymer of

ethylene, and a butene, a pentene, a hexene, a heptene, octene and 4-methyl pentene and 1 grade etc. The consistencies of such an ethylene-alpha olefin copolymer are 0.915 g/cm<sup>3</sup>. The following or 0.940g/cm<sup>3</sup> When exceeding, the membrane formation nature of the interlayer 4 by combination with a styrene-butadiene block copolymer falls and is not desirable.

[0018] Moreover, if the adhesiveness of a film increases that the amount of styrene which constitutes the styrene-butadiene block copolymer used for the middle class's 5 formation is less than 50 % of the weight, and handling becomes difficult and it exceeds 90 % of the weight, adhesion with the heat sealant layer 6 in low temperature worsens and is not desirable.

[0019] And the mixing ratio of the ethylene-alpha olefin copolymer and styrene-butadiene block copolymer in the middle class 5 influences greatly the peel strength at the time of exfoliating, after carrying out thermal melting arrival of the lid material 1 to the container made of synthetic resin, and the transparency of the lid material 1. When a styrene-butadiene block copolymer exceeds [ the amount of ethylene-alpha olefin copolymers ] 70 % of the weight less than 30% of the weight, an interlayer's 5 membrane formation nature becomes low, and the transparency of lid material falls and is not desirable, either. On the other hand, the amount of ethylene-alpha olefin copolymers exceeds 70 % of the weight, when a styrene-butadiene block copolymer is less than 30 % of the weight, the adhesion force of an interlayer 5 and the heat sealant layer 6 is too small, and the peel strength of lid material is not less [ fitness reinforcement ], and desirable.

[0020] An interlayer's 5 thickness usually has desirable about 10-60 micrometers. When an interlayer's thickness is less than 10 micrometers, if membrane formation nature is bad and exceeds 60 micrometers, the thermal melting arrival nature of the lid material 1 will worsen.

[0021] Moreover, for the lid material 1 of this invention, the layer which can make an interlayer 5 multilayer structure and touches the heat sealant layer 6 in this case in order to raise an interlayer's 5 membrane formation precision is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It needs to be formed from the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers.

[0022] Drawing 2 is the outline sectional view showing the example of the lid material of this invention which made the interlayer two-layer structure, and the interlayer 5 consists of 1st resin layer 5a and 2nd resin layer 5b. In this case, 1st resin layer 5a is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with an ethylene-alpha olefin copolymer. And 2nd resin layer 5b which touches the heat sealant layer 6 is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. Such thickness of 1st resin layer 5a and 2nd resin layer 5b can be set to about 5-30 micrometers, respectively.

[0023] Drawing 3 is the outline sectional view showing the example of the lid material of this invention which made the interlayer the three-tiered structure, and the interlayer 5 consists of 3rd resin layer 5c prepared between 1st resin layer 5a, 2nd resin layer 5b, and 1st resin layer 5a and 2nd resin layer 5b. In this case, 1st resin layer 5a is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with an ethylene-alpha olefin copolymer. Moreover, 2nd resin layer 5b which touches the heat sealant layer 6 is a consistency 0.915 - 0.940 g/cm<sup>3</sup>. It is formed with the resin constituent which consists of 30 - 70 % of the weight of ethylene-alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers. And 3rd resin layer 5c is a layer with the mixed large ratio of an ethylene-alpha olefin copolymer from 2nd resin layer 5b. Thickness of such 1st resin layer 5a, 2nd resin layer 5b, and 3rd resin layer 5c can be set to about 3-20 micrometers, respectively.

[0024] The above interlayers 5 can form with a dry lamination process or an extrusion lamination process. Moreover, an interlayer 5 can form by the usual film forming-membranes methods, such as a tubular film process and a T-die method.

[0025] In case the lid material 1 by which thermal melting arrival was carried out to the container made of synthetic resin when the lid material 1 of this invention possessed the above interlayers 5 is exfoliated, the exfoliation between the layers of an interlayer 5 and the heat sealant layer 6 or exfoliation by the cohesive failure in the heat sealant layer 6 interior arises. The peel strength in this case is weaker than the thermal melting arrival reinforcement of the heat sealant layer 6 and the container made of synthetic resin which are mentioned later, and it is desirable that it is the range of 100-1200g / 15mm. If peel strength is set to 100g / less than 15mm, in case the container after carrying out thermal melting arrival of the lid material will be transported, the exfoliation between the layers of an interlayer 5 and the heat sealant layer 6 or exfoliation by the cohesive failure in the heat sealant layer 5 interior arises, and there is a danger that contents will drop

out. Moreover, it is [ a possibility that the container made of synthetic resin may vibrate and contents may jump out in the case of exfoliation of lid material ] and is not desirable if peel strength exceeds 1200g / 15mm. In addition, the above-mentioned peel strength is the value of 180-degree exfoliation under 23 degrees C and 40%RH ambient atmosphere (exfoliation rate = a part for 300 mm/).

[0026] Therefore, the lid material 1 can exfoliate certainly from the container made of synthetic resin, after it made sufficiently high thermal melting arrival reinforcement to the container made of synthetic resin by the heat sealant layer 6 and it carries out thermal melting arrival.

[0027] It can be suitably chosen by controlling heat-sealing conditions whether the exfoliation between the layers of the above interlayers 5 and the heat sealant layer 6 (interlaminar peeling) is produced here or exfoliation by the cohesive failure in the heat sealant layer 6 is produced. That is, interlaminar peeling of an interlayer 5 and the heat sealant layer 6 can be produced by what the conditions at the time of heat sealing are made severe for (it is high in whenever [ stoving temperature ], and is long in heating time, and pressurization is strengthened), and exfoliation by the cohesive failure in the heat sealant layer 6 can be produced by making loose the conditions at the time of heat sealing. as the example of the above-mentioned heat-sealing conditions -- the case of interlaminar peeling -- whenever [ stoving temperature ] -- =140-200 degree C, heating time = 0.5 - 2.0 seconds, and pressurization =1.0 - 5.0 kgf/cm<sup>2</sup> extent -- it is -- the case of cohesive failure -- whenever [ stoving temperature ] -- =100-150 degree C, heating time = 0.1 - 1.0 seconds, and pressurization =0.5 - 3.0 kgf/cm<sup>2</sup> It is extent.

[0028] The heat sealant layer 6 is a layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by thermoplastics.

[0029] The mixed resin of polyurethane resin and vinyl chloride vinyl acetate copolymer resin of the thermoplastics used for the heat sealant layer 6 is desirable, and, as for a mixed ratio, it is desirable to consider as the range of 9:1-4:6. When there are few amounts of polyurethane resin than the above-mentioned mixed ratio, the viscosity of a mixed resin constituent increases and spreading formation of a heat sealant layer becomes difficult. Moreover, when there are more amounts of polyurethane resin than the above-mentioned mixed ratio, peel strength will be less than the above-mentioned fitness peel strength (100-1200g / 15mm), and is not desirable. As the above-mentioned polyurethane resin, it is a product made from Japanese Polyurethane Industry. NIPPORAN 5120, product made from Arakawa Chemistry KL494 grade is mentioned. Moreover, as vinyl chloride vinyl acetate copolymer resin, it is made in Union Carbide. Vinylite VAGH, Vinylite VACH, Vinylite VACA, etc. are mentioned.

[0030] An about 0.01-0.5-micrometer thing has [ such conductive impalpable powder ] desirable mean particle diameter as a primary particle.

[0031] As for the weight ratio of the above conductive impalpable powder and the thermoplastics in the heat sealant layer 6, it is desirable that it is within the limits of 1:10-5:2. If the amount of conductive impalpable powder increases more than the above-mentioned range, transparency and heat-sealing reinforcement will become inadequate. Moreover, if there are few amounts of conductive impalpable powder conversely than the above-mentioned range, the surface resistivity and the charge damping time which peel strength stops satisfying the above-mentioned fitness peel strength (100-1200g / 15mm), and mentions later will be acquired.

[0032] In addition, especially the thickness of the heat sealant layer 6 has the desirable range of 0.8-2 micrometers 0.5-5 micrometers.

[0033] The charge damping time which is within the limits of 105-1012 ohms, and it takes for the surface resistivity to decline 99% from 5000V under 23\*\*5 degrees C and 12\*\*3%RH to the bottom of 22 degrees C and 40%RH is 2 or less seconds, and such a heat sealant layer 6 has the outstanding static electricity property. When the above-mentioned surface low effectiveness exceeds 1012 ohms, the static electricity spreading effect gets extremely bad, and it becomes difficult to protect electronic parts from the static electricity destruction, and it is 105. When it becomes under omega, the electrical and electric equipment may energize from the exterior to electronic parts through lid material, and there is a danger that electronic parts will be destroyed electrically. On the other hand, when the charge damping time which is the standard of the diffusion rate of the charge generated with static electricity exceeds 2 seconds, the static electricity spreading effect gets extremely bad, and it becomes difficult to protect electronic parts from the static electricity destruction. In addition, above-mentioned surface resistivity and the above-mentioned charge damping time can be measured based on MIL-B-81705C which is U.S. Military Standard.

[0034] The heat sealant layer 6 can be made to contain additives, such as a distributed stabilizer, a surface active agent, and an antiblocking agent, if needed.

[0035] Spreading formation of such a heat sealant layer 6 can be carried out on the middle class 5 by the

coating approaches, such as the air doctor coat method, the blade coat method, the knife coat method, the rod coat method, the direct roll coat method, the reverse roll coat method, the gravure coat method, the slide coat method, and the slot cage philharmonic coat method.

[0036] As for the above lid material of this invention, total light transmission has transparency from which 50% or more and a haze value become 80% or less. Therefore, the container made of synthetic resin is filled up with contents, and after carrying out the lid material 1 thermal melting arrival and sealing it, the existence of contents and a restoration condition can be inspected and checked by viewing.

[0037] And since the exfoliation between the layers of an interlayer 5 and the heat sealant layer 6 or exfoliation by the cohesive failure in the heat sealant layer 6 interior produces the lid material 1 of this invention, it has the detachability ability stabilized without being influenced by the thermal melting arrival conditions to the container made of synthetic resin. Such interlaminar peeling is explained with reference to drawing 4 thru/or drawing 7. First, as shown in drawing 4 and drawing 5, thermal melting arrival of the lid material 1 as shown in the carrier tape 11 equipped with the embossing section 12 at drawing 1 is carried out. This thermal melting arrival is performed to the both ends of the embossing section 12 in the shape of Rhine by predetermined width of face. In the example of illustration, the slash section has shown the Rhine-like thermal melting arrival part H. In this condition, the range of the adhesion reinforcement of the interlayer 5 of the lid material 1 and the heat sealant layer 6 or the disruptive strength of the heat sealant layer 6 is 100-1200g / 15mm, and it is small from the thermal melting arrival reinforcement of the heat sealant layer 6 and the carrier tape 11. Next, in case it exfoliates from the carrier tape 11, when interlaminar peeling of the above-mentioned interlayer 4 and the heat sealant layer 5 produces the lid material 1, as shown in drawing 6, in the Rhine-like thermal melting arrival part H, thermal melting arrival of the heat sealant layer 5 is carried out to the carrier tape 11, and exfoliation produces it between the layers of an interlayer 4 and the heat sealant layer 5. Therefore, the lid material 1 exfoliates, where the Rhine-like thermal melting arrival part H is left on a carrier tape among the heat sealant layers 5. While thermal melting arrival of a part of heat sealant layer 5 had been carried out to the carrier tape 11 in the Rhine-like thermal melting arrival part H on the other hand as shown in drawing 7 when having exfoliated from the carrier tape 11 and exfoliation by the cohesive failure of the heat sealant layer 5 above-mentioned interior produced the lid material 1, as a part is removed with the lid material 1, exfoliation in the heat sealant layer 5 interior arises. Therefore, regardless of the thermal melting arrival reinforcement of the heat sealant layer 5 and the carrier tape 11, the lid material 1 exfoliates according to the disruptive strength of the heat sealant layer 5.

[0038] That is, the lid material 1 of this invention has the opposite property [ say / the high thermal melting arrival nature to the carrier tape 11, and the easy detachability at the time of exfoliation ].

[0039] As a container made of synthetic resin set as the use object of the lid material of above this inventions A polyvinyl chloride (PVC), polystyrene (PS), polyester (A-PET) PEN, PET-G, PCTA, polypropylene (PP), a polycarbonate (PC), Containers made of resin, such as a polyacrylonitrile (PAN) and acrylonitrile-butadiene-styrene copolymer (ABS), Or the impalpable powder made from electric conduction which gave the product made from electric conduction, Si system organic compound, and a surfactant can be scoured as a cure against static electricity to metallic oxides, such as a conductive carbon particle, a metal particle, tin oxide, and a zinc oxide, titanium oxide, or what was applied can be mentioned to these.

Moreover, the thing in which the compound sheet plastic which comes to carry out the laminating of PS system, ABS system resin film, or sheet containing carbon black by the co-extrusion in one was formed to one side or both sides of PS system resin sheet or an ABS system resin sheet is also mentioned.

[0040] Next, the example of an experiment is shown and the lid material of this invention is further explained to a detail.

(Example of an experiment) As a biaxial-stretching resin layer, the biaxial-stretching polyethylene terephthalate (PET) film (12 micrometers in S pet 6140 by Toyobo Co., Ltd. and thickness, corona treatment article) was prepared.

[0041] Moreover, the polyethyleneimine solution (product P-100 made from NIPPON SHOKUBAI Chemistry) was prepared as an object for adhesives layers.

[0042] Furthermore, low density polyethylene (LDPE) ( Myra Son 16made from Mitsui Petrochemistry-P) was prepared as an object for glue lines.

[0043] in order [ next, ] to form the middle class -- the following line as an ethylene-alpha olefin copolymer -- the following S-B copolymer was prepared as a low density polyethylene (L-LDPE) and 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block (S-B) copolymer, and the monolayer film was obtained by the tubular film process.

[0044] L-LDPE:Mitsui Petrochemical Industries, Ltd. make -- ULTZEX 3550A consistency =0.925 g/cm3



S-B copolymer: -- Asa FREX 810 by Asahi Chemical Industry Co., Ltd. -- in order to form a heat sealant layer, polyurethane resin, following vinyl chloride vinyl acetate copolymer resin, and following conductive impalpable powder were prepared again.

[0045] polyurethane resin: -- product made from Japanese Polyurethane Industry NIPPORAN 5120 vinyl-chloride-vinyl-acetate-copolymer resin: -- Union Carbide vinylite VAGH conductivity impalpable powder: - Mitsui Mining and Smelting Co., Ltd. make It Pasto-Laon-IV(s). 0.1 micrometers, next such each ingredient are used. Mean particle diameter = first Heat adhesion of the interlayer (30 micrometers in thickness) is carried out on the mixed conditions of L-LDPE and a S-B copolymer which extrude on the adhesives layer formed in the PET film, and are shown in the following table 1 through a LDPE layer (20 micrometers in thickness) by the lamination process. The film of PET / adhesives layer / glue line / interlayer was obtained. Then, the heat sealant layer (2 micrometers in thickness) of the presentation shown in the following table 1 was formed by the gravure reversing method on the middle class, and lid material (samples 1-12) was created.

[0046]

[Table 1]

表 1

蓋 材	中 間 層 の 組 成		ヒートシーラント層の組成		
	L・LDPE	S・B 共重合体	ポリウレタン 樹脂	塩酢ビ 共重合体	導電性 微粉末
試料 1	4 0	6 0	7 5	2 0	1 9 0
試料 2	4 0	6 0	7 5	2 0	2 2 0
試料 3	4 0	6 0	7 5	2 0	1 0
試料 4	4 0	6 0	9 0	1 0	1 9 0
試料 5	4 0	6 0	4 0	6 0	1 9 0
試料 6	6 0	4 0	7 5	2 0	1 9 0
試料 7	4 0	6 0	7 5	2 0	2 5 0
試料 8	4 0	6 0	7 5	2 0	5
試料 9	4 0	6 0	9 5	5	1 9 0
試料 1 0	4 0	6 0	3 0	7 0	1 9 0
試料 1 1	8 0	2 0	7 5	2 0	1 9 0
試料 1 2	2 0	8 0	7 5	2 0	1 9 0
比較 試料 1	4 0	6 0	7 5	2 5	3 0 0

\* 表 1 中の数値は重量部を示す。

\* 塩酢ビ共重合体：塩化ビニル－酢酸ビニル共重合体を示す。

Moreover, the following conductive carbon particle was used as conductive impalpable powder, and also the



comparison sample 1 as well as the sample 1 of the above-mentioned table 1 was created.

[0047] Conductive carbon particle: Product made from size \*\*\*\*\* Pudding tex XE2 mean particle diameter = total light transmission, surface resistivity, and the charge damping time were measured on condition that the following whenever [ haze ] about 0.4 micrometers, next each above-mentioned lid material (samples 1-12, comparison sample 1). Moreover, thermal melting arrival of each above-mentioned lid material was carried out to the conductive polyvinyl chloride resin base material (product made from Peace Chemistry XEG47) on two sorts of following conditions using the heat-sealing bar, and peel strength was measured on condition that the following after that.

(Measuring condition of whenever [ haze ], and total light transmission) It measured in color computer SM [ by Suga Test Instruments Co., Ltd. ]-5SC.

(Measuring condition of surface resistivity) It measured by Huy Lester IP by Mitsubishi Petrochemical Co., Ltd. under 22 degrees C and 40%RH.

(Measuring condition of the charge damping time) The time amount taken to decrease 99% from 5000V under 23\*\*5 degrees C and 12\*\*3%RH is based on MIL-B-81705C, and it is STATIC DECAY METER-406C made from ETS (Electro-Tech Systems, Inc). It measured.

(Thermal melting arrival conditions)

\*\* : -- the bottom of 150 degrees C, 0.5 seconds, 3.0 kgf/cm2\*\* : 140 degree C, 0.4 seconds, 1.0 kgf/cm2

(Measuring condition of peel strength) 23 degree C, and 40%RH -- setting -- made in Oriental Baldwin -- tensilon universal testing machine HTH-100 It measured. (Exfoliation rate = part 180-degree exfoliation for 300 mm/)

The measurement result and exfoliation gestalt of the above-mentioned item about each lid material were shown in the following table 2.

[0048]

[Table 2]

表 2

蓋 材	ヘーズ度 (%)	全光線透 過率(%)	表面抵抗率 ( $\Omega$ )	電荷減 衰時間 (秒)	剥離強度 (g/15mm) 条件①	剥離強度 (g/15mm) 条件②	剥 離 形 態 条件①	剥 離 形 態 条件②
試料 1	65	88	$10^9$	0.1	200	180	層間剥離	凝集破壊
試料 2	72	84	$10^7$	0.1	800	760	層間剥離	凝集破壊
試料 3	50	92	$10^{12}$	0.1	100	100	層間剥離	凝集破壊
試料 4	65	88	$10^9$	0.1	300	280	層間剥離	凝集破壊
試料 5	65	88	$10^9$	0.1	800	760	層間剥離	凝集破壊
試料 6	65	88	$10^9$	0.1	450	400	層間剥離	凝集破壊
試料 7	82	80	$10^5$	0.1	900	860	層間剥離	凝集破壊
試料 8	35	92	$>10^{13}$	2.2	50	50	層間剥離	層間剥離
試料 9	65	88	$10^9$	0.1	90	90	層間剥離	層間剥離
試料 10	65	88	$10^9$	0.1	820	800	層間剥離	凝集破壊
試料 11	70	91	$10^9$	0.1	80	80	層間剥離	層間剥離
試料 12	82	89	$10^9$	0.1	800	760	層間剥離	凝集破壊
比較試 料 1	85	20	$10^9$	0.1	600	560	層間剥離	凝集破壊

\* 剥離形態…層間剥離：中間層とヒートシーラント層との界面で剥離が生じ、基材にヒート

シーラント層が残る形態。

凝集破壊：ヒートシーラント層内部が破壊され剥離される形態。

As shown in Table 2, samples 1-6 were equipped with good transparency and the static electricity property, and the exfoliation between the layers of an interlayer and a heat sealant layer or the exfoliation by the cohesive failure inside a heat sealant layer produced them in moderate peel strength.

[0049] On the other hand, since a sample 8 had a little few contents of conductive impalpable powder, as for 80% or more and transparency, whenever [ haze ] was [ the sample 7 ] conversely inadequate [ the sample 7 had a little many contents of the conductive impalpable powder of a heat sealant layer, and ] and, as for the sample 8, peel strength was less than proper reinforcement, and 2 seconds or more and an electrical property were also falling [ surface resistivity / 1013ohms or more and the charge damping time ] further. Moreover, since a sample 10 had a little few amounts of polyurethane resin, the sample 9 was less than proper peel strength, the sample 10 had the high viscosity of sealant ink, and coating operability was conversely bad [ the sample 9 / there are a little many amounts of polyurethane resin of a heat sealant layer, and ]. Furthermore, the sample 11 had a little much L-LDPE of an interlayer, conversely, since a sample 12 had a little little L-LDPE, the sample 11 was less than proper peel strength, and, as for the sample 12, whenever [ haze ] was getting [ transparency ] worse at 80% or more.

[0050] Moreover, the total light transmission of the comparison sample 1 was inadequate, and its transparency was [ whenever / haze ] low.

[0051]

[Effect of the Invention] As explained in full detail above, the heat sealant layer which constitutes lid material according to this invention It is the layer in which the conductive impalpable powder which uses a barium sulfate as base resin was distributed by thermoplastics. While lid material holds transparency by this heat sealant layer, it has a good antistatic property. Moreover, the interlayer who adjoins a heat sealant layer

and is located between a biaxial-stretching resin layer and a heat sealant layer A consistency 0.915 - 0.940 g/cm<sup>3</sup> 30 - 70 % of the weight of ethylene-alpha olefin copolymers, Since it is formed with the resin constituent which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [ of butadienes ] styrene-butadiene block copolymers, In case lid material is exfoliated, it sets between the layers of an interlayer and a heat sealant layer. Exfoliation, Or while the exfoliation by the cohesive failure inside a heat sealant layer arose and this had maintained the adhesive property with a high heat sealant layer, good detachability can be acquired and a setup of the thermal melting arrival conditions to the container made of synthetic resin of lid material becomes easy.

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[Translation done.]

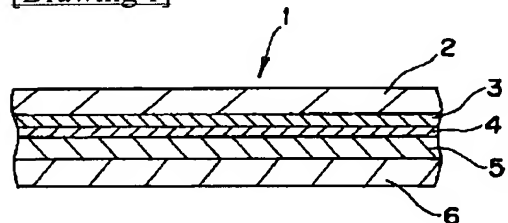
## \* NOTICES \*

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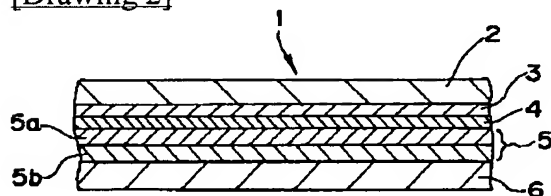
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

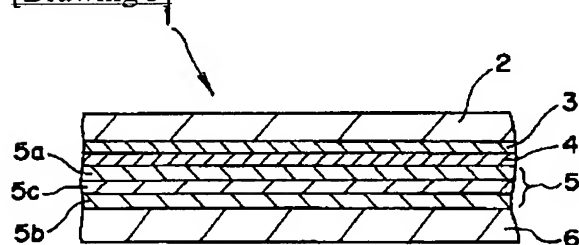
[Drawing 1]



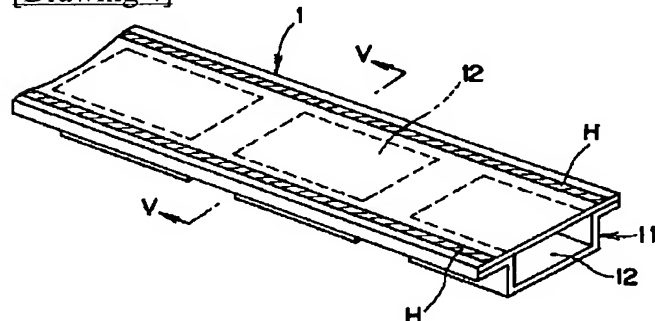
[Drawing 2]



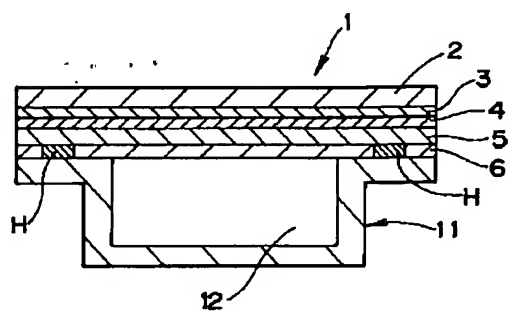
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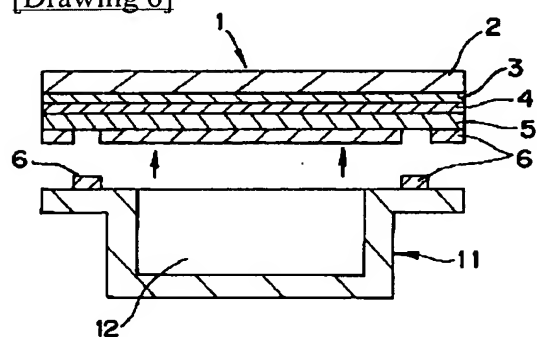
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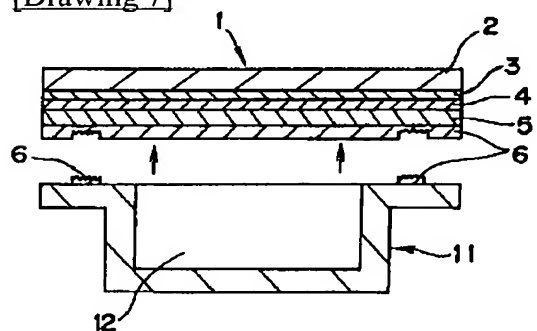
[Drawing 5]



[Drawing 6]



[Drawing 7]



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[Translation done.]